INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN

FY2014-2015 SECTION 106

POTOMAC BASIN WATER QUALITY IMPROVEMENT

OCTOBER 2015 FINAL REPORT

WORKPLAN AND PROGRESS REPORT TEMPLATE

Restyled October 24, 2014

This is an ongoing program. The nature of the scope of work for the use or generation of environmental data is similar to work completed in previous grants and has an approved QMP. The accomplished tasks • support development of TMDLs, • enhance water quality restoration and protection on a watershed basis, • improve drinking water source area protections, • help develop and maintain adequate monitoring and assessment measures, and • foster greater involvement of informed citizens.

GRANT COORDINATOR

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Goal 2: Coordination and Outreach

Goal: (2) Clean and Safe Water **Objective:** (2.2) Protect Water Quality **Program Result Code:** 202B06

Work Plan Component: Water Quality Assessment **EPA Contact:** Michael Hoffman, Leo Essenthier **ICPRB Contact:** Claire Buchanan (301) 274-8112

Program Description: ICPRB will continue to initiate, participate in, and contribute to inter-agency initiatives that protect and enhance the waters and related resources of the Potomac River basin, and improve the management and availability of Commission resources to support science-based decision-making.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
Enhanced interstate management for water quality restoration and protection	Grant management Adherence to ICPRB QMP Participation in & contributions to inter-agency initiatives Upgraded website	***FY15 Outputs:*** 1. Quarterly progress reports to the ICPRB Commission and semi-annual progress reports to EPA3 with description of specific activities and their contributions to the states' water quality protection efforts. 2. Submit EPA Form 5700-52A, MBE/WBE Report, for FY2014 by Oct 31, 2014. 3. Submit Financial Status Report for FY2014 by December 31, 2014. 4. Submit an application for the FY2016 Section 106 grant by July 31, 2015. 5. Improved access to Commission resources and products ***FY15 Activities:*** 1. Management of this grant 2. Implement QA/QC as required by ICPRB Quality Management Plan 3. Participate in and contribute to inter-agency water quality initiatives: ◦ EPA Region III Water Directors meetings ◦ EPA Chesapeake Bay Program workgroups and goal implementation teams (WQGIT, STAR, Steam Health Workgroup) ◦ Maryland Water Monitoring Council ◦ Association of Mid-Atlantic Aquatic Biologists ◦ Anacostia Watershed Restoration Alliance, Anacostia Restoration Potential Workgroup, Anacostia Watershed Citizen's Advisory Council, and Anacostia Watershed Management Committee ◦ Inter-agency and / or watershed based groups focused on water quality problems (including the Potomac Watershed Roundtable) ◦ Trash Free Potomac Watershed Initiative ◦ VA James River Chla Criteria Study Science Advisory Panel (SAP) 4. Improve management and availability of Commission resources; enhance communication of Commission scientific studies through non-technical, online summaries	***FY15 Outputs:*** 1 and 5) Ongoing 2, 3 and 4) Completed ***FY15 Activities:*** 1) Ongoing 2) Ongoing 3) Activities include: attend meetings; review documents, and WQ and watershed models; perform data analyses; make presentations; serve as board member and treasurer (ICWP), panel member (James River SAP). 4) Significant effort was put into the new ICPRB website as a means of communication; management of Commission resources continues to improve.

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Goal: (2) Clean and Safe Water | **Objective:** (2.2) Protect Water Quality | **Program Result Code:** 202B06

Work Plan Component: Water Quality Assessment | **EPA Contact:** Michael Hoffman, Leo Essenthier | **ICPRB Contact:** Heidi Moltz, (301) 274-8116

Program Description: ICPRB will continue to participate in, contribute to, and/or provide technical assistance to efforts that promote integrated water resources management in the Potomac River basin and the United States. The Commission will continue efforts to encourage development of a Potomac Basin-Wide Comprehensive Water Resources Plan, and assemble the regional data, tools, and information that will be needed to implement the plan.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
Improved protection of drinking water source areas		***FY15 Outputs:*** 1. Expanded WQ data inventory contents and interactive map (Activity 4) 2. Data and report (Activity 5) by September 30, 2015 ◦ Describes influence of impervious cover under various watershed conditions ◦ Objective: inform activities in the basin involving source water protection and integrated water resources management 3. Marsh and Rock creek blog (http://www.marshrockwaterplan.blogspot.com/) ***FY15 Activities:*** 1. Participate in, contribute to, and/or provide technical assistance to the following groups: ◦ Pennsylvania Statewide Water Resources Committee ◦ Pennsylvania Potomac Regional Water Resources Committee ◦ Adams County (PA) Water Resources Advisory Committee ◦ Interstate Council on Water Policy Association of Clean Water Administrators (board member) ◦ other groups involved in local and interstate safe drinking water / water quality issues 2. Promote interest in the Potomac Basin-Wide Comprehensive Water Resources Plan 3. Exercise ICPRB spill response procedures and coordinate with utilities and government agencies to maintain proficiency in	***FY15 Outputs:*** 1) The water quality inventory report, spreadsheet, and interactive map are live on the ICPRB website at http://www.potomacriver.org/focus-areas/water-quality/potomac-basin-water-quality-data-inventory/. 2) Phase 1 of the impervious cover study is complete. The final report is available on the ICPRB website at http://www.potomacriver.org/wp-content/uploads/2015/10/ICP15-5_Moltz.pdf. 3) Complete. ***FY15 Activities:*** 1) ICPRB continued participation in these and other groups. 2) ICPRB used EPA's Recovery Potential Screening Tool to evaluate the geographic distribution of potential challenges to the sustainability of water resources in the Potomac River Basin. This geospatial analysis resulted in the development of a risk assessment methodology that yielded six risk maps by category and a total risk map for the basin. Results were included in the draft introductory sections of the Potomac basin comprehensive water resources plan (under development). 3) The contact information for spill notifications is continually updated. ICPRB participated in a large-scale exercise with Colonial Pipeline. ICPRB

		regional response to actual spill events 4. Expand FY14 report on the water quality data inventory ◦ Begin to geo-locate collection sites in inventory ◦ Begin construction of an interactive map of locations on ICPRB website 5. Building a hydrologic foundation in the Potomac River basin to investigate the influence of urban development and impervious surface cover on streamflow metrics ◦ Build on previous work identifying effects of >0.35% impervious cover ◦ Further assesses these impacts in the Potomac basin in different physiographic provinces, geologies, precipitation regimes, and other important physical characteristics 6. Maintain Marsh and Rock creek blog (www.marshrockwaterplan.blogspot.com/)	Commissioners received a briefing on the model and ICPRB's role in regional notification. A limited number of small spills provided notification procedure practice. Multiple staff members were involved in responding to the latex spill from the Upper Potomac River Commission WWTP in late September. 4) A graduate student intern (UDC) worked 120 hours to update and quality assure the inventory. Volunteer organizations were added to the inventory. An interactive map of data sources was developed and posted to the ICPRB website along with the spreadsheet inventory and the associated report (see link above). 5) The final report of this Phase 1 study is now available on the ICPRB website, including a description of the upcoming Phase 2 analysis that will use the latest data and a higher spatial resolution. 6) Complete. This blog will no longer be maintained by ICPRB. Administrative privileges will be provided to local stakeholders should someone choose to adopt it.

Task 3: Assistance to Potomac jurisdictions' monitoring strategies

Goal: (2) Clean and Safe Water **Objective:** (2.2) Protect Water Quality **Program Result Code:** 202B06

Work Plan Component: Water Quality Monitoring **EPA Contact:** Michael Hoffman, Leo Essenthier **ICPRB Contact:** Jim Cummins (301) 274-8106

Program Description: ICPRB will continue to enhance the collective understanding of the Potomac River mainstem's general condition. The results will inform managers of potential biological impacts relating to flow modifications and large water withdrawals above the Great Falls and Little Falls sections.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
Increased knowledge of key biological populations in the Potomac mainstem		***FY15 Outputs:*** 1. Progress report on 2014 field season due March 31, 2015 2. Data and interpretive report of ICPRB 2012-2014 Potomac mainstem surveys provided to the states and to EPA3 by June 30, 2015 ***FY15Activities:*** 1. Large river assessments ○ Process ICPRB FY14 survey macroinvertebrate samples and SAV and mussel data sheets ○ Acquire recent state and federal agency data and reports for the Potomac mainstem ○ Perform comparative analysis of ICPRB 2012-2014 data with mainstem Potomac data from other agencies ○ Integrate ICPRB, state, and federal study results	***FY15 Outputs:*** 1) Completed. 2) In progress. ***FY15Activities:*** 1) Available at www.potomacriver.org Publications. ICPRB Report 14-4. 2) All field work was completed. Data sheets have been processed. Taxonomic identifications and counts of the macroinvertebrate samples were delayed due to staff turnover and had to be subcontracted. An RFP was issued, a subcontractor selected, and the counts are now complete. Recent state and federal agency data and reports for the Potomac mainstem were acquired.

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Goal: (2) Clean and Safe Water **Objective:** (2.2) Protect Water Quality **Program Result Code:** 202B06

Work Plan Component: Water Quality Assessment **EPA Contact:** Michael Hoffman, Leo Essenthier **ICPRB Contact:** Claire Buchanan (301) 274-8112

Program Description: ICPRB will continue to disseminate the results of Commission studies to broader scientific and resource management audiences, and contribute to the base of scientifically defensible knowledge needed for effective policy and decision-making.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
Enhanced assessments of aquatic ecosystem health		***FY15 Outputs:*** 1. Papers submitted for publication in peer-reviewed journals 2. Updated and expanded technical information on ICPRB website ***FY15 Activities:*** 1. Publishing in peer-reviewed journals provides a rigorous critique of ICPRB methods and results, broader dissemination of the results, and a scientifically defensible base of knowledge to inform policy and decision-making. In FY2015, ICPRB proposes to complete and submit papers describing the results of recent investigations, specifically: ○ The identification of nutrient thresholds for macroinvertebrates that are protective of high quality streams and rivers in Mid-Atlantic states. ○ Reference phytoplankton populations and the appropriateness of the 10% hyperbolic reference curve for regulatory assessments ○ Development of a multi-variable index of tidal shallow water quality derived from near-continuous monitoring data (pH, DO, turbidity, Chl-a) using state water quality criteria/thresholds. 2. Update and expand the technical section of the ICPRB website with ○ Interactive graphics of Potomac data ○ Links to scientific studies, presentations, and data analyses ○ Maps showing health of streams, rivers, and estuary	***FY15 Outputs:*** 1) Ongoing 2) See technical products listed below ***FY15Activities:*** 1) A manuscript describing Reference phytoplankton populations and another describing a Phytoplankton Habitat Index are nearly completed. Progress on these were delayed by 3b below. 2) Considerable effort was made by several staff to update and expand the technical content of ICPRB website. 3) Additional activities: a) Technical training opportunities were provided to staff, including participation in a) a 1-day workshop on "spatial statistical modeling on stream networks" (April 20, 2015), and b) 6-week online course on spatial analysis in GIS by ESRI and Udemy. b) Staff responded to requests during the fiscal year for additional data analysis and feedback: • Data analyses performed and reported in ICPRB Report 14-06, prepared for WVDEP (*Water Quality Trend Analysis at Twenty-Six West Virginia Long-Term Monitoring Sites*). • Data analyses performed for the James River Chlorophyll Criteria Study (VADEQ) • White paper (PRC-15-1) and oral presentation prepared for the James River Chlorophyll

			Criteria Study, in response to VADEQ request for feedback (white paper available on request from C. Buchanan) • Invited oral presentation prepared for the 11/6/2015 meeting of the James River Chla Criteria Study. c) Staff explored ways to create a common database structure that can contain data and related information from the Potomac states' Integrated Reports. The purpose was to facilitate ICPRB and other analyses supporting TMDL development and implementation, and to respond to requests from the public regarding causes of impairment in individual watersheds. Integrated Report data sets from the Potomac jurisdictions were obtained, and their content and terminology reviewed. Building a common database structure appears too time consuming and difficult at this time, given state reporting differences. d) Staff explored the usefulness to ICPRB projects of the recently available database of HUC12-based information supporting the EPA's Recovery Potential Screening tool.

Goal: (2) Clean and Safe Water **Objective:** (2.2) Protect Water Quality **Program Result Code:** 202B06

Work Plan Component: Water Quality Assessment **EPA Contact:** Michael Hoffman, Leo Essenthier **ICPRB Contact:** Jim Cummins (301) 274-8106

Program Description: ICPRB will continue to document the effectiveness of American shad restoration efforts in the Potomac River. ICPRB initiated efforts in 1988 to design and construct the Little Falls fish passage which eventually was completed in 2000, and led subsequent effortsto re-establish and monitor shad populations.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
Viable American shad population in the Potomac River		***FY15 Outputs:*** 1. Report to EPA and the states on FY2014 field activities by December 31, 2014 2. Annual update of Potomac American shad status population on ICPRB website by December 31, 2014 ***FY15 Activities:*** 1. Relate Potomac shad population trends to Potomac River and Chesapeake Bay restoration efforts 2. Provide input to the Chesapeake Bay Program shad indicator when requested	***FY15 Outputs:*** 1) Completed. 2) Update is completed. Workgroup participation continues. ***FY15 Activities:*** 1) Available at www.potomacriver.org Publications. ICPRB Report 14-7. 2) Annual update is available at www.potomacriver.org under Aquatic Life, Shad Restoration. J. Cummins is working with CBP and other agencies to refine the CBP shad indicator

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Goal: (2) Clean and Safe Water **Objective:** (2.2) Protect Water Quality **Program Result Code:** 202B06

Work Plan Component: TMDL **EPA Contact:** Michael Hoffman, Leo Essenthier **ICPRB Contact:** Ross Mandel (301) 274-8118

Program Description: ICPRB will continue to participate in and contribute to the development of regional TMDLs and efforts to improve the model-based tools and approaches used in TMDL development.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
Improved tools for TMDL development		***FY15 Outputs:*** 1. Memos documenting significant tasks performed, as requested, in support of jurisdiction TMDL programs or other regulatory programs such as the MS4 program. Submitted as requested. 2. Tech memos documenting evaluation and/or adaption of computer simulation models to water quality problems in the Potomac River basin (Activity 3). Submitted as requested. 3. Literature survey on BMP reduction efficiencies for pathogens and indicator bacteria. Due September 30, 2015 4. TMDL development for District of Columbia Potomac and Rock Creek watersheds: a. Memorandum with model and approach recommendations (by Jan 2015); b. Report describing model calibration, existing loads, and TMDL calculations including daily loads for WLAs and LAs (by Summer 2015); and c. Presentations at public meetings in Fall of 2015, and responses to comments related to the technical aspects of the TMDL (by Spring 2016). ***FY15 Activities:*** 1. Provide technical assistance, on request, to basin jurisdictions in addressing TMDL-related issues. 2. Provide technical review of MS4 permits or other regulatory or programmatic documentation and assistance for MS4 permit implementation, on request of basin jurisdictions. 3. Analyze computer simulation models for potential application to TMDLs and water quality problems. 4. Explore methods for developing implementation plans which	***FY15 Outputs:*** 1) (i) Presentation at Joint Reservoir Technical Advisory Group Meeting at Baltimore COG on reconciling local reservoir TMDLs and Chesapeake Bay TMDL (10/8/2014). (ii) Responded to EPA comments on Fairview Beach Watershed Plan 2) Ongoing 3) Findings report on literature reviews of BMP reduction efficiencies for pathogens and indicator bacteria (10/5/15). 4) (a) Draft work plan submitted for revising DC toxics TMDLs for Rock Creek and Potomac River tributaries (2/12/15) 4) (b) Draft tech memo documenting revision of Tidal Potomac PCB TMDL allocation for DC Middle Potomac WQS so that DC portion of Rock Creek assigned to WLA and direct drainage LA (9/14/15) 4) (b) Draft report on modeling work to support revision of pesticide TMDLs in small tributaries in DC portion of Rock Creek and Potomac River (10/2/15) ***FY15 Activities:*** 1) Reviewed Typical Year Analysis for City of Alexandria CSS Permit (VADEQ) with inconclusive results 2) Ongoing participation in Stakeholder Meetings

		address TMDLs for multiple constituents and in particular, review how methods to control bacteria can be related to nutrient and sediment reduction. 5. Upon EPA's request, ICPRB will review and comment on any toxics monitoring plan in DC or on the toxics monitoring data collected. 6. Consult with EPA and DDOE and assist as requested in the development of toxics TMDLs in the Potomac and Rock Creek watersheds as identified in DDOE's 2014 approved IR.	for DC Consolidated TMDP Implementation Plan for MS4 3) On behalf of VADEQ, reviewing Fairfax County models (SWMM, MUSIC, HEC-RAS, and STPEL) for possible use in Accotink Creek TMDL development. 4) Assisted Lisa Wainger's effort to account for additional benefits from Chesapeake Bay TMDL implementation. 5) Superseded by (6) below. 6) Work to revise the toxics TMDLs for DC Rock Creek and Potomac River tributaries is ongoing.

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Goal: (2) Clean and Safe Water **Objective:** (2.2) Protect Water Quality **Program Result Code:** 202B06

Work Plan Component: Water Quality Assessment **EPA Contact:** Michael Hoffman, Leo Essenthier **ICPRB Contact:** Curtis Dalpra (301) 274-8107

Program Description: ICPRB will continue to disseminate information about the Potomac River through media, presentations, workshops for educators,and partnerships with watershed groups. The Commission maintains a Potomac-focused library and website.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
A public that is more informed about and actively engaged in protecting the Potomac basin's water resources		***FY15 Outputs:*** 1. Support for ICPRB newsletter(s) 2. Press releases and other outreach efforts to grow media and public attention to Potomac issues (e.g., weekly Potomac River Watch in summer, weekly Potomac News Reservoir) 3. Respond to information requests 4. Update, expand, and maintain website www.potomacriver.org 5. Workshops and presentations to watershed and other groups 6. Maintain ICPRB library for public research purposes 7. Build and participate in coalitions of local governments and citizen groups for stream restoration projects	***FY15 Outputs:*** 1) The **Potomac Basin Reporter** newsletter is being redeveloped as a periodic electronic newsletter. We are now shooting to begin in January 2016. Its initial subscription will be to about 800 people. In the meantime, ICPRB communicates news about itself and the basin through its other outreach areas (See 2. And 4. Below). 2) The **Potomac News Reservoir** weekly news clipping service continues to serve more than 800 subscribers 800. The reservoir covers Potomac basin water quality and resources issues, and includes a column about ICPRB activities. EPA Region 3 news products are sometimes included in the service as relevant. We would appreciate direct receipt of any materials that Region 3 deems especially important. **Potomac River Watch** is a regional public service announcement sent to media weekly between Memorial Day and Labor Day. It gives recreational reports, event highlights, and features a short news item about the Potomac River or ICPRB. The service is sent to more than 70 media outlets in the region. The service generates several requests for interviews with ICPRB staff during the season. The Commission also issues occasional **press releases** to advertise events or meetings. 3) Through email and telephone, ICPRB fields about 15 **information requests** each week for information from the public, state agencies, and other organizations. Queries range from publication requests to detailed questions about aspects of Potomac water quality, geography, and getting the correct contacts for fish kills, spills, or regulatory questions. The recent spills on the Potomac have tripled information requests in late September. Numerous news articles included reference to ICPRB. 4) The new **website** launched and has received very positive feedback. The site already has a better map section, updated project pages, and better integration with social media. The site also will develop more pages on the recreational and other uses of the river, designed to drive a more generalized and larger demographic to the site. The site is now more closely integrated with the ICPRB Facebook page, which also serves newsletter and press release functions. The most recent addition is a large directory of best management practices and conservation projects that can be done by small citizen groups or individual, and dovetails nicely with ICPRB outreach to schools.

		FY15 Activities: 1. Promote public involvement and stewardship, and educate the public on Potomac basin issues, using various tools, including ○ Producing newsletters/other publications ○ Maintaining an active website and social media sites ○ Providing direct support for watershed organizations (organizational, administrative, and scientific support) ○ Producing press releases and using other methods to bring Potomac issues to public attention through the media ○ Presentations and workshops. 2. Help organize and participate in annual Chesapeake Watershed Forum	5) The ICPRB currently is using three teacher-training programs to help educators develop Meaningful Watershed Educational Experiences and address Environmental Literacy requirements through issues-based curriculum and campus action projects. The programs are listed below with the numbers of teachers and students served from October 2014 through April 2015. **Watershed Connections:** teachers build land-use watershed models and learn to use our lessons in student investigations of watersheds, land use, stormwater pollution and Best Management Practices. • Taught 54 educators, who will use the model with at least 3000 students during the next school year. • Provided this 90-minute hands-on program to 770 students in combination with action projects. • Presented program and shared resources with watershed groups in Maryland and Pennsylvania. **Stream Ecology and Monitoring:** provide mentoring and workshops on biological, physical, and chemical water monitoring. • Mentored or supported stream monitoring programs at four schools – provided resources and taught 8 teachers, 7 parent volunteers, and 210 students. **Score Four:** A series of transdisciplinary lessons has been developed to guide teachers and students through investigations of the school watershed, campus stormwater runoff, and implementation of a Low Impact Development project. • Delivered to 21 teachers • Collaborated with 1 Maryland school district to incorporate Score Four program into all biology classes for satisfaction of Environmental Literacy requirements. • Performed year-long pilot project at a middle school, involving 21 students, 2 instructors, 1 volunteer, and two governmental organizations. Staff continues efforts to spread workshop delivery over more of the basin. The project also has created lesson plans for teachers that incorporate the principles from the workshops into classroom activities and themes. The lessons have received input from educational specialists and will be shared with the public on ICPRB'website. 6) The **library** contains more than 3,000 volumes, much of which is not available online. Library acquisitions are slowing, reflecting the shift to digital. ICPRB is digitizing all of our reports and providing them on-line. This is a time consuming project, making it unlikely that ICPRB could digitize its complete holdings. Also, the Commission has decided to decrease effort on some new series of reports from other agencies which are available on-line. The library had two outside vistors use the facility during the quarter. 7) Most of the activity for this task is included in 5 above. Additional activities included rainbarrel workshops and sales through local governments and organizations. The ICPRB continues to partner in the Potomac Watershed Cleanup with the Alice Ferguson Foundation, and periodically works with several watershed groups in providing advice and helping with small projects. ***FY15 Activities:*** 1) Ongoing 2) Ongoing

Pilot Monitoring to Build Assessment Capability for Virginia

Goal: (2) Clean and Safe Water **Objective:** (2.2) Protect Water Quality **Program Result Code:** 202B06

Work Plan Component: Water Quality Monitoring **EPA Contact:** Michael Hoffman, Leo Essenthier **ICPRB Contact:** Claire Buchanan (301)-274-8112

Program Description: ICPRB will complete a pilot study in the Shenandoah River basin that is developing methods for quantifying filamentous algaegrowth in Virginia rivers and streams. The study results are intended to assist VADEQ in evaluating the impacts of filamentous algae on recreational uses of state waters.

Environmental Outcomes	Measures	Outputs (Work Products and Activities)	Status / Comment
New methods for evaluating filamentous algae in Virginia rivers		***FY15 Outputs:*** 1. Draft report to EPA and Virginia DEQ for review and comment by January 31, 2015 2. Final report by September 30, 2015 or earlier ***FY15 Activities:*** 1. Complete development and field testing of assessment methods for filamentous algae in Virginia Shenandoah waters 2. Coordinate data collection of citizen monitors and process data. 3. Write report summarizing methodology and FY2014 survey results.	***FY15 Outputs:*** 1) Completed 2) Completed and available online at www.potomacriver.org ***FY15 Activities:*** 1 and 2) Field activities were completed in the fall of 2014 when filamentous algae were present in the Virginia Shenandoah River and tributaries. 3) A draft final report was submitted to EPA3 for review on March 3, 2015, and to WVDEP for review a few days later. Comments and edits received from EPA3 were addressed and the report was then forwarded to VADEQ for review on March 13, 2015. Typos were corrected. No significant modifications or clarifications were requested from VADEQ as of April 17, 2015. The report is final and is available online at www.potomacriver.org.